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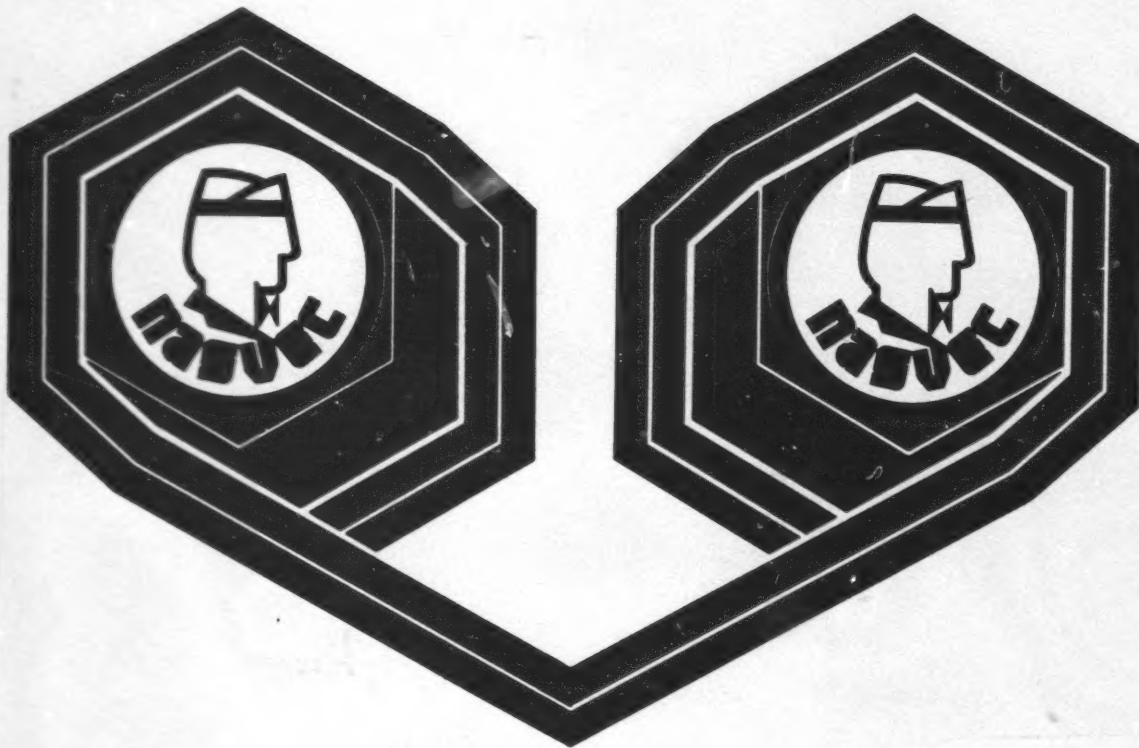
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ABSTRACT

The document is a handbook for a vocational automotive service education program which was formulated as a result of a four-day series of intensive workshops called the National Automotive Service Vocational Education Conference. The handbook discusses the major components of an automotive service vocational education program and aspects of their importance to the overall program: (1) the structure, purposes, and makeup of the advisory committee, which comprises the foundation of the program, as well as the teacher-training committee and the State and national committee; (2) the instructor, who is responsible for the training of the student, and the processes involved in instructor recruitment, education, inservice guidance and training, and performance evaluation; (3) the student, the recruiting climate, qualifying and pretesting, counseling, and student Placement; (4) the curriculum, objectives, levels, and the need for flexibility as well as constructing and updating the curriculum; (5) facilities and tools to provide the student with a real-life service shop and to meet teaching objectives; (6) test and measurement to improve evaluation; and (7) an ongoing program to meet changes in technology, education, teaching methods, and student needs. A list of the participants to the workshops are appended. (EC)

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ACTION HANDBOOK FOR AUTOMOTIVE SERVICE INSTRUCTION

Prepared for educators and industry as a special project
of the Service Managers Committee, Motor Vehicle
Manufacturers Association of the United States, Inc., 320
New Center Building, Detroit, Michigan 48202

U.S. DEPARTMENT OF HEALTH,
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FOREWORD

For years, educators and service industry representatives—independently of each other, for the most part—have searched for ways to implement a national training program that would satisfy the needs of vocational education and, at the same time, meet the employment needs of the automotive service industry. In early 1973, the Service Managers Committee of the Motor Vehicle Manufacturers Association, with John Bates, Director of Service, General Motors Corporation, as Chairman, accepted the challenge to develop such a program.



A Planning Committee, with Mel H. Chesney of Ford Motor Company as Chairman and William D. McLean of the Motor Vehicle Manufacturers Association as Secretary, was formed. They were joined by 18 key persons from all segments of vocational education and industry. The Planning Committee laid out an overall agenda for a national conference and established seven major areas to explore development of a national, voluntary training standard. The Planning Committee then selected Chairmen and vice-Chairmen to direct the activities of work

shop participants in each of the seven areas.

The vehicle used to develop this needed, real-world action plan was a four-day series of intensive workshops called the National Automotive Service Vocational Education Conference (NASVEC). The Conference was held in Detroit in the spring of 1974. More than 150 leaders from industry, education, and government attended.

This manual contains the results of that meeting. It is a total action plan with built-in flexibility to allow ease of implementation by any public or private sector organization in the nation conducting, or planning to conduct, a vocational automotive service training program. The manual also reflects the tremendous teamwork of participants representing nearly all segments of vocational education and the automotive service industry.

As Chairman of the NASVEC project, it gives me a great deal of pleasure to thank, for their active support and encouragement, the National Automobile Dealers Association; the American Vocational Association; the Office of Education of the U.S. Department of Health, Education, and Welfare; the Automotive Service Councils of America; the Bureau of Apprenticeship and Training of the U.S. Department of Labor; the National Institute for Automotive Service Excellence; the Automotive Information Council; and the Motor Vehicle Manufacturers—American Vocational Association Industry Planning Council. In addition, I especially wish to thank the Automotive Service Industry Association and the Automotive Trade Association Managers for their extended courtesy which helped make NASVEC a reality.

Mel H. Chesney, Chairman
National Automotive
Service Vocational
Education Conference



National Automotive Service Vocational Educational Conference

The National Automotive Service Vocational Education Conference (NASVEC) was held in the spring of 1974 in Detroit. It was sponsored by the Motor Vehicle Manufacturers Association in cooperation with the Automotive Service Industry Association and the Automotive Trade Association Managers. More than 120 leaders in vocational education and vocational administration, as well as interested federal, state, and local officials, joined key personnel from the motor vehicle manufacturing and service industries at conference sessions.

NASVEC's goal was to find ways to significantly improve training for both entry-level and in-service car and truck mechanics. This "Action Handbook" resulted from the deliberations of the NASVEC delegates.

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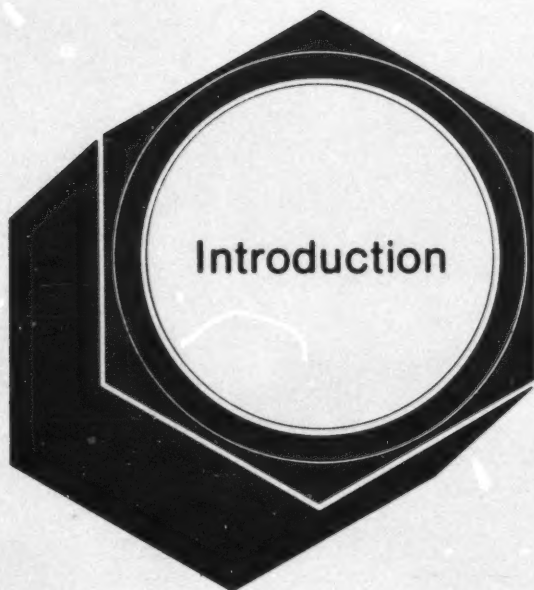
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All of us recognize the position the automotive service industry faces with respect to the supply of good automotive mechanics.

- *On the one hand, we face today a shortage of well-trained, competent mechanics with good attitudes and work habits.*
- *On the other hand, we know that more and more mechanics are going to be required as automotive vehicles increase over the coming years, both in sheer numbers and in technological complexity.*

We all know this and we agree that "something has to be done." In every segment of the industry there has been a lot of talk about the problem. Unfortunately, like the weather, there has been a maximum of talk and not enough concerted action.

This is not to say that *no action* has taken place. Car manufacturers have made major efforts. Progressive dealers, in their local areas, have also tried to find some of the answers. Service-industry associations have also produced action. A national testing and certification program has been created.

Yet it's interesting to note that while a national—and nationally accepted—testing and certification program has been set up, a comparable nationwide *educational and training* system has not.

This brings us to a second problem:

The United States unquestionably has the most active, widespread network of schools, colleges, and other educational and training institutions of any country in the world. Completely *free* education through high school is available everywhere, as is low-cost education through junior colleges, vocational schools, and technical institutions.

Within this huge educational establishment, vocational auto mechanics is not a major subject. Yet the need for auto mechanics is great...in a great industry. Of all the service-and-repair businesses in this country, automotive service ranks number one, by far, in number of establishments.

It is encouraging, therefore, to note the increased emphasis in the education community on vocational education. Whereas the traditional secondary school of a generation or more ago pointed students, wherever possible, toward a college degree, today's educational counselors recognize that not every student needs, wants, or will profit from the traditional college education.

The result has been a vast expansion of junior or community colleges, with two-year programs. Vocational schools, too, have grown, with better budgets and facilities, and a gradual improvement in quality of students.

A second reason for the problems in automotive-service training is the fragmented nature of the service establishments. These are, by and large, small businesses, too small individually to indulge in in-shop training of a sophisticated nature or to motivate (and assist) the local educational establishment to provide the training.

The large entities, of course, are the motor vehicle manufacturers. Their very size—and their relationship to the service industry—dictate essentially a national approach. But in the final analysis, the automotive-service education program must be local. Such a program must fit the needs the industry faces in any given metropolitan, suburban, or rural area.

In solving the automotive-service education problem, we must perceive it to be actually not *one problem*, but a complex of many problems—problems that are basically similar from area to area, city to city, but few of which are exactly alike. It follows that no single program can be laid out to fit *all* local situations. Like most all-purpose tools, such a single program, in its attempt to be all things to all people, would end up meaning "nothing to nobody".

That is why this *Action Handbook for Automotive Service Vocational Instruction* has been prepared. The *Action Handbook* is, in effect, a roadmap for the guidance of anyone wanting to develop an effective automotive-service education program (or to improve on one already in existence).

Like any roadmap, the *Action Handbook* will not tell you where you should go. Only you can determine your destination (in terms of your local problems and goals). And only you know

the point you are starting from. Once you have determined your point of departure and your goal, the *Action Handbook* will show you the route to take to reach your goal.

You will find this a practical handbook, representing real-life experience on the part of more than 150 people. These people represent, in depth, all organizations concerned with automotive-service education: vehicle manufacturers, automotive dealers, government agencies, labor unions, educators at all levels, and trade and industry associations.

For the most part, these are recommendations of seven committees which met in the spring of 1974 during the first National Automotive Service Vocational Education Conference. This conference was sponsored by the Motor Vehicle Manufacturers Association. The reports of these committees form the basis of the *Action Handbook*.

The Advisory Committee

The Advisory Committee is the foundation of a successful automotive-service vocational education program. Defining the criteria for success is, in fact, a function of the Advisory Committee, as is the measurement of the program in terms of these criteria. This is because the Advisory Committee represents the industry that the program is designed to serve. The well-being of the automotive-service industry rests heavily on the success of the educational program.

By the same token, the Advisory Committee is an indispensable input device for those carrying out the program: the educational institutions, the instructors and counselors, and the teacher-training institutions.

This leads us to differentiate between two types of advisory committees. First is the automotive-service educational program committee; and second is the teacher-training committee. While the basic difference in orientation of the two committees is self-evident, the sum of the efforts of both must be to provide the industry and the community with automotive mechanics in adequate numbers and with the competence, attitudes, and specialty skills required in a given locality.

Most of what we have to say about the Advisory Committee, therefore, applies in nearly equal measure to both committees. Distinctions



between the two types of committees, such as in orientation and purpose, will be dealt with specifically as we go along.

There is also a need for advisory committees at the local, state, and national levels. The activities of committees at each of these levels will differ, as we discuss later. We shall concentrate our attention, however, on the local committee because it has the most direct impact on the training program.

COMMITTEE PURPOSES

The Advisory Committee is in no way a passive group. Rather, it is an *action* group with defined and important responsibilities and purposes.

All the same, the Committee must recognize its limited areas of *authority* over the program. It is not essentially a *control* agent because operating control must rest with the educational system or institution that has final responsibility for conduct of the program and for the quality and quantity of the program's output.

Working *with* the educational institution, therefore, the Committee will arrive at this set of purposes:

- | | |
|---|--|
| ☐ <i>Program goals and objectives;</i> | ☐ <i>Monitoring;</i> |
| ☐ <i>Provision of information;</i> | ☐ <i>Evaluation;</i> |
| ☐ <i>Guidance;</i> | ☐ <i>Updating;</i> |
| ☐ <i>Review of standards;</i> | ☐ <i>Student placement.</i> |

Program Goals and Objectives

If the educational system has to implement the stated goals and objectives of a program, it necessarily must agree to and adopt them as its own. Nevertheless, if the school intends to serve the legitimate interests of the automotive-service industry, it must look to this industry for help in setting its goals. Therefore, this is the point of entry of the Advisory Committee in its relationship with its "partners" in the educational job to be done.

This is where the makeup of the Committee membership begins to prove itself.

The Committee must truly represent the automotive-service industry of the geographic area served by the schools or institutions. Yet even in a relatively "compact" locality, the industry is not so homogeneous that just any half-dozen willing participants will provide a workable consensus of objectives. The various individual concerns of the industry will have to be given priority evaluation. Certainly compromises will have to be made. Hence this initial stress on Committee makeup, even though the subject of makeup will be discussed in detail later.

School-System Participation At some point in the generation of goals, those in the school system who must implement them will have to participate—perhaps right from the start.

Whatever the program arrived at, it must fit within the staff and budget capabilities of the school. The Committee must recognize the responsibilities of the school in other educational areas and be aware of the constraints imposed on schools by state and federal supervision and regulation.

8 And, while the representatives of the educational system may not be skilled auto

mechanics, they can still furnish valuable insights into training concepts and objectives.

Written Objectives - A written statement of objectives must be arrived at. This statement confirms the thinking and interaction of all participants; it is an exhibit for all to see. If properly written, it will provide a reference point for future use and evaluation, as well as for the inevitable misunderstandings and divergencies that will arise.

Several drafts of the statement will be required. Even what is generally considered the final draft should be "aged" for a while and then brought back to the table for review and appropriate finishing touches.

Realistic Objectives - Especially the "first time around" for a newly organized Committee, objectives can be put forth that are unrealistic, overambitious, or just plain wrong. Here is where the educator's viewpoint is especially helpful. So is a regular and uninhibited review of goals as the program progresses. The driver with the best road map may take a wrong turn, encounter a detour, or decide on the basis of new information that he should change his route or destination.

Provision of Information

You'll need little imagination to see the value to the educational participants of the information the industry can provide through the Advisory Committee. This information can relate to several areas:

- ☐ *Current needs of the industry;*
- ☐ *Technological disciplines involved;*
- ☐ *Competitive employment and wage situation;*
- ☐ *Effects of new model introduction;*
- ☐ *Industry trends and changes of all kinds;*
- ☐ *Feedback from results of the program;*
- ☐ *Community concerns as distinct from those of the industry.*

The Committee must be recognized as an organized means of transmitting pertinent information and "filtering" it for inaccuracy and bias. The Committee must develop ways of gather-

ing, checking, and passing on information with a minimum of delay and loss in transmission—and with a minimum of group effort. The Committee also must maintain *two-way* informational exchange with the schools (and the community) because the *more* input from concerned participants, the *better* the output.

Guidance

The guidance function of the Committee is the first link in the guidance chain that reaches from the Committee to the student via the educational system, the counselor, and the teacher. The task of guidance may not look simple and easy on the surface, and it's probably even more difficult than it looks.

The problem of who or what to guide is not difficult. Guidance is most obviously needed for:

- ☐ *Students and prospective students;*
- ☐ *Teachers and counselors (while in training and in-service);*
- ☐ *Graduates of the program.*

Guidance must also extend to educational administrators and those who supervise and prepare curricula, course and training materials, and budgets. School boards and governing bodies of educational institutions need guidance. And so do members of the automotive-service industry when they are involved in co-op and other types of training tied closely to the school program.

The ultimate guide, of course, is the student, the goal being to recruit, train, and hire the "good" ones and hopefully screen out the unsuitable ones. A similar goal applies to teacher training; only the frame of reference changes.

Since the student and the teacher-in-training are such obvious targets for guidance, it is easy to slight the other areas for guidance mentioned above. The need for and degree of guidance of administrators and others will vary from one situation to another. It therefore becomes necessary for the Committee to establish an overall guidance program to fit its situation, incorporating appropriate review and spot-check procedures.

Review of Standards

There are three types of standards with which the Committee will have to deal:

- ☐ *Mandated standards;*
- ☐ *Optional standards;*
- ☐ *Committee-originated standards.*

Mandated Standards - Educational standards are imposed on public schools by local, state, and federal law and regulation and by those granting recognized credit for school work. Such standards are normally neither optional nor subject to modification. The educational system can be expected to be aware of these, in compliance with them, and helpful to the Committee in accommodating its work to them.

Optional Standards - Certain standards are recommended or suggested by agencies supervising school programs on an optional basis. Again, school officials may be looked to for guidance in connection with these.

Committee Standards - Nothing prevents the Committee, however, from adopting standards of its own, provided they do not conflict with mandated standards. In certain areas, the Committee will have the freedom to set or suggest standards *higher* than those mandated or recommended.

The Committee will be particularly contributory in developing standards of work excellence in automotive service in terms of the specialized needs of the local industry.

Monitoring - The nature of all systems and programs put together by man is such as to require that someone keep a finger on the pulse. Once the Committee has begun the organization of its activities in conjunction with the appropriate educational institution, the next step is to invent and put in operation a system to monitor the functioning of activities. This monitoring extends to Committee activities as well as to the activities of the schools.

Evaluating - Evaluation may be considered a refined, higher-level kind of monitoring. Evaluation, however, is essentially performance oriented and requires a more formal approach. Evaluation judges the performance of program and people against the standards, it is done customarily in writing, and it is scheduled for intervals appropriate to the quantity or quality being measured.

Detailed treatment of standards and evaluation is given in Chapter 6.

Updating - The subject of updating, of course, is part of nearly all of the preceding discussion of Committee purposes. All of the Committee's work will carry at least a minimum amount of updating as a normal thing—in many cases it will be the reason for the activity.

Updating is a special item here because the automotive service industry constantly changes to reflect technological advances and improvements in auto and truck manufacturing.

Keeping things up-to-date, therefore, must be of greater concern to our Advisory Committees than to one in a more settled or traditional area of training. Chapter 7, the Ongoing Program, deals further with this subject.

MAKEUP OF THE COMMITTEE

To be effective, the Advisory Committee must be:

- ☐ *truly representative of the automotive-service industry of the area served;*
- ☐ *made up of people willing and capable of contributing to the Committee's work and objectives.*

Since the Committee is to be advisory to a specific educational institution or system, the educational administration should appoint members. If a Committee is being newly organized, an informal committee should be formed by the industry to guide the school administration and make membership recommendations.

Makeup of a typical Committee might include the following:

- ☐ *New-car dealer service manager;*
- ☐ *Representative of mass merchandiser;*
- ☐ *Independent garage owner—A.S.C. member;*
- ☐ *Journeyman mechanic;*
- ☐ *Former student employed in the industry;*
- ☐ *Manufacturer's field representative;*
- ☐ *Trade union representative.*

Additional industry representation might include heavy-truck service specialists and fleet-maintenance personnel.

School-system personnel would normally be assigned to the committee as *ex-officio* members or consultants. These might be chosen from the following:

- ☐ *Instructor;*
- ☐ *Counselor;*
- ☐ *Coordinator or supervisor.*

While the school's representation to the Committee would stay relatively constant, membership from the industry would most effectively be changed and renewed by means of staggered terms of service. Rotation of industry members in this way will:

- ☐ *Insure broader industry representation;*
- ☐ *Infuse new ideas and contributions;*
- ☐ *Spread the burden of Committee work.*

COMMITTEE OPERATION

The effectiveness of the Advisory Committee over the long term requires that it operate on a planned and organized basis. Early meetings should deal with:

- ☐ *By-laws or operating rules;*
- ☐ *Election of officers;*
- ☐ *Frequency of meetings;*
- ☐ *Need for meeting agendas;*
- ☐ *Subcommittees;*
- ☐ *Record-keeping and committee communication.*

By-Laws - a set of by-laws or operating rules is necessary to define the Committee's overall purpose, membership make-up, organization, and methods of operation. Typically, the by-laws will define:

- ☐ *Membership selection and term of office;*
- ☐ *The officers—method of election, term of office, and duties;*
- ☐ *Frequency of meetings;*
- ☐ *Subcommittees.*

There are many good handbooks on committee organization and operation. These should be consulted for detailed procedures and suggestions.

Officers - It is customary for the committee to elect its own chairman and other appropriate officers. An officer's term of office would usually be for one year to gain diversity of contribution and share the workload among the Committee membership.

Meeting Frequency - Each committee will have to determine its own meeting schedule, achieving a balance between adequate frequency to get the work done and excessive demands on the time of members. Too frequent meetings have the harmful side effect of encouraging needless nit-picking and excursions into areas better left to others.

Planned use of subcommittees is an excellent way of avoiding needless demands on the time of the membership as a whole.

Agendas - No meeting should be held without an agenda submitted in advance to all members. The agenda should list all items of business to be undertaken at the meeting and the meeting should, as far as possible, adhere to the agenda. When so employed, the agenda serves to:

- ☐ *Shorten meetings;*
- ☐ *Keep meetings focused on the work at hand;*
- ☐ *Give members time for advance preparation.*

The only exception to the advance agenda is the emergency meeting, and at such a meeting the only business which should be conducted is the emergency for which the meeting was called.

The agenda is normally the responsibility of the chairman or other designated officer. The committee secretary serves to put the agenda in final form and distribute it to members.

Subcommittees - A set of subcommittees can serve to speed up the work of the Committee as a whole and to introduce opportunity for special segments within the industry to be heard. Typical of such subcommittees would be Automotive Service, Electrical Service, Body and Paint Service, and Heavy-Truck Repair.

Record-Keeping and Communications - The continuing effectiveness of the Committee will rest on proper keeping of

minutes of meetings and other records of Committee activities, including subcommittee activity.

We suggest that a member of the school staff—instructor or coordinator—serve the Committee as secretary, perform the record-keeping functions, and prepare agendas and minutes of meetings. He should have appropriate clerical help and facilities available at the school.

TEACHER-TRAINING COMMITTEE

Most of what we have said thus far also applies to the Advisory Committee that works with the teacher-training institution. The teacher-training Committee, of course, will be involved in the recruitment, education, and testing of the teachers who will in turn train the auto mechanics in the local educational systems.

Even though the Committee's partner in teacher training will be a college-level institution, orientation toward the automotive service industry, its needs, and its developing technologies will still take first precedence.

The Teacher-Training Committee will have broader scope, because teacher training institutions usually serve more than one school or one educational system. This additional scope requires that the Teacher-Training Committee take into account the needs of the industry on a larger geographical scale.

STATE AND NATIONAL COMMITTEES

A local training program for automotive service mechanics can proceed effectively with an active local Advisory Committee in the absence of state and national committees. The reverse is not true, however, so first efforts must be in organization of the local groups.

The state Committee, unless one already exists, will be a logical—and not too difficult—outgrowth of a network of local Committees within the state.

The concerns of the state Committee will differ substantially from those of the local committee. The state Committee will find itself in contact with the state department of education on matters of statewide policy. It should be, in fact, a strong force in shaping state vocational education policy. In the process, the Committee will have to work with state legislators and

legislative committees to communicate the needs of the industry and to seek appropriate recognition of them.

In addition to representing industry segments, the state Committee also will have to exhibit geographical representation. Urban, suburban, and rural segments of the state should be represented.

Close liaison between state and local Committees is essential. Since the state group will be concerned with statewide educational policy, standards, and procedures, many of the problems uncovered by local committees in these areas may logically fall to the state committee for attempt at solution on a statewide basis.

Two areas in particular are usually under substantial state control and guidance: funding of vocational-education programs and supervision of teacher-training institutions (and certification of teachers). These areas will therefore be of special concern to the state committee.

A national Advisory Committee's further removed from the local scene than the state Committee. It would, in fact, not necessarily be as logical an outgrowth of the state Committees as the state groups are of local ones.

Of far greater impact is the relationship of a national Committee with the U.S. Office of Education (HEW) and the Congressional members and committees influencing federal funds for vocational education. The political role the state Committees will have to assume will be even more pronounced at the federal level.

Several national associations are vitally concerned with automotive service training and

their contributions will be especially noticeable at the level of the national Committee. These include the Motor Vehicle Manufacturers Association, the Automotive Service Industry Association, the Automotive Service Councils, the Motor and Equipment Manufacturers Association, the Automotive Engine Rebuilders Association, the National Automobile Dealers Association, the American Vocational Association, and a number of others.

Many of these groups offer support or assistance of one kind or another at the local level, but, being national in scope, they can be expected to be more directly active on the national level. It can reasonably be anticipated that many of these associations will designate representatives to the national Committee.

FOCAL POINTS FOR THE COMMITTEE

The local Advisory Committee will focus its attention on six areas:

- ☐ *The instructor;*
- ☐ *The student;*
- ☐ *The curriculum;*
- ☐ *Facilities and instructional tools;*
- ☐ *Test and measurement;*
- ☐ *The ongoing program.*

Each of these forms the subject of one of the following six chapters. As viewed by the Advisory Committee, therefore, these six chapters may be considered an amplification of the responsibilities and duties of the Committee.

The Instructor



The instructor is the "pivot point" for the entire automotive-service vocational education program.

Nearly all efforts of the Advisory Committee come to a focus sooner or later on the instructor. The same may be said of the school administration and of its guidance and counseling activities.

The instructor is the one individual with a direct, in-depth, and continuing relationship with each student. His influence on the student is greater than that of any other person, especially with respect to the quality of auto mechanic the student becomes. For this reason, much is required of the automotive-service instructor.

Ideally, the instructor will possess three outstanding qualities:

- *Knowledge and skill in the technical and mechanical facets of automotive service;*
- *Ability to teach—to convey information and skills and motivate people to learn;*
- *Contagious enthusiasm for the automotive-service industry and its career opportunities.*

A proper mix of these three qualities is not found in just anyone—so we cannot assign "just anyone" the job of training our auto mechanics. The old saying that "those who can, *do*; those who can't, *teach*" never did possess much truth, and it most certainly does not apply to the automotive-service instructor we are seeking. A truly vocational program—that is, a program which prepares a student to go to work, and to succeed as a mechanic—requires an instructor who can both *do* and teach *how to do*!

The task of establishing an automotive-service education faculty from scratch (which is not always necessary) involves these steps:

- *Recruitment of teacher-candidates;*
- *Teacher education and training;*
- *Pre-employment screening;*
- *In-service guidance and training;*
- *Performance evaluation.*

RECRUITMENT

It is generally expected of a good teacher that he be versatile—that is, that he be able to pick up an unfamiliar subject and, within a short time, teach it nearly as well as the discipline in which he was originally trained. Unfortunately, this expectation is not realistic in vocational education and especially in automotive-service education.

The instructor of auto mechanics must himself be an expert auto mechanic. Without this industry expertise, the instructor will more likely turn out a graduate with just a superficial knowledge of cars and trucks, when a competent and employable automotive mechanic is what the industry needs.

In teacher recruitment, therefore, the "ground zero" requirement is at least an acceptable level of expertise in automotive-service work and the aptitude to quickly fill in whatever gaps may exist. With due credit to the art of teaching, it is easier and more effective to teach a mechanic how to teach than it is to teach a teacher how to service automobiles and trucks.

This is not to say that a liking for teaching and an aptitude for the art of teaching are not required. They are vital. Possessing this aptitude, the teacher-candidate will find it possible, with appropriate instruction, to rapidly achieve competence as a teacher.

This leads to two essential questions:

1. *What is the minimum acceptable level of automotive-service competence?*
2. *What level of aptitude for teaching should be sought...and how should it be measured?*

Ideally, the prospective teacher would be proficient in all the following areas:

- ☐ *Engines;*
- ☐ *Transmissions (and clutches);*
- ☐ *Rear axles;*
- ☐ *Carburetion and fuel systems;*
- ☐ *Electrical systems;*
- ☐ *Ignition systems;*
- ☐ *Steering and suspension systems;*
- ☐ *Heating and*

air conditioning;

- ☐ *Brakes and brake systems;*
- ☐ *Drive trains;*
- ☐ *Body sheet-metal, hardware, and accessories.*

Deciding where to back away from this ideal list—to compromise—is the appropriate task of the Advisory Committee. The Committee will soon discover that the area and degree of the compromise cannot be frozen, but must be decided to a great extent on the basis of the individual prospective instructor. This is not to say that the compromise decisions be made lightly but that they:

- ☐ *Vary with the individual candidate;*
- ☐ *Vary with local needs;*
- ☐ *Are dependant on the exercise of good judgement.*

Minimum requirements suggested include a high-school diploma or its equivalent and at least five years of recent and broad experience in automotive service. Proficiency is what counts, however, and practical examinations in automotive work, such as the NIASE certification program (described in Chapter 6) are strongly recommended.

Aptitude for teaching is more a matter for the teacher-training institution than for the Advisory Committee. There are tests for measuring this aptitude which can be provided by the participating educational institutions. The educators in such institutions are familiar with the available tests. Since theirs is the job of administering the tests and rating the candidate, they should have the responsibility of test selection.

Additional benchmarks in this area which the Advisory Committee should consider include:

- ☐ *Neat and presentable appearance;*
- ☐ *Reasonably articulate speech and writing;*
- ☐ *Evident liking for people, especially young people;*
- ☐ *Patience and lack of artistic temperament.*

Even in these matters, wisdom dictates con-

sultation with educators to prevent too arbitrary a set of standards from setting in.

Identifying Teacher Recruits

The discussion so far implies that the recruitment process starts at the teacher-training level. The farther downstream toward the fully qualified teacher recruitment can be started, however, the more efficient it will be. So let's first of all look at our present auto-mechanics teachers.

A vocational auto-mechanics instructor may actually be a *candidate*—a candidate to become a far more effective instructor than he now is. Such a candidate may have his teaching credentials in good order but may lack expertise in one or more technical areas—a lack that may preclude his total effectiveness in his work. Appropriate in-service technical training may, in effect, yield from 33% to 50% "more teacher" at little or no extra cost. And the added training he requires should be relatively easy to provide.

The industrial-arts auto-shop teacher is another close-at-home candidate. The committee may find some of these teachers with technical competence far exceeding what is needed to teach a superficial course for students with casual or avocational objectives. The competence of others may be closer to the minimum acceptable level, but nevertheless subject to considerable improvement in a short time through in-service training.

It should also be noted that hiring auto-mechanics instructors away from other schools will solve one problem by immediately creating a problem for someone else—and will make no contribution to the overall supply of qualified instructors.

The military services constitute a source of recruitment, both for experienced instructors and for trained mechanics qualifying for teacher-training programs. Access to these people is through the individual services, Project Transition, career symposiums at military installations, and military news publications and bulletins. The educational benefits to which these people are entitled will cover all or most of the cost of the required teacher and trade training.

Skilled auto mechanics from the trade constitute a valuable source for teacher recruitment. The larger number of these prospects will be employed in the trade, although serious consideration should be given to retirees. Among the latter will be those taking early retirement and shop owners who can afford to retire early from the pressures of business.

Transferring a mechanic from the practice of auto service to the teaching of it should in no way be considered a loss to the trade. The right candidate taken from "the ranks", properly trained for teaching, and given adequate program support and guidance, will "replace himself" many times over during his teaching career.

The search for mechanics with teaching aptitude may well start by keeping an eye on outstanding graduates of automotive-service programs—and by encouraging these graduates to parallel preparation for teaching with their early years of auto-shop experience.

Similar consideration of industry personnel should extend to service and parts managers in dealerships, expeditors, and others who may exhibit technical competence at or above the minimum acceptable level. Maintenance supervisors for fleets should not be overlooked. Nor, for that matter, should salesmen for auto and truck service supplies and parts—men who are by nature likely to possess many of the qualities of a good teacher.

Names of potential recruits are likely to come—and should be sought—from many sources: Advisory Committee members, industry employers, state departments of employment security, organized labor, and elsewhere.

Screening of Recruits

Some informal, preliminary screening may be done by the Advisory Committee of those recruits that come before it; these are most likely to be people from the trade itself. The formal screening process, however, should be left to the teacher-training institution, using a process set up through the joint efforts of the institution and the Committee.

In setting up the formal screening procedure, the Advisory Committee should bear the burden of setting the service-work standards. Although the training institution will do the screening, it may want to refer to the Committee those cases where the school feels excep-

tions should be considered to the service-work experience standards.

Although years of work experience are a factor, the training-entry standards should be as much concerned with the breadth of automotive service performed. Recognized examinations and certifications, such as the NIASE, should be given heavy weight because of their objective nature and the evidence they provide of the recruit's initiative and eagerness for proficiency. The school should contact all references given by the applicant, possibly referring to the Committee those reference follow-ups that seem vague or less than candid.

TEACHER EDUCATION

That portion of the teacher-training program that deals with the education process itself should be left to the training institution. A show of interest in this aspect of the program by the Committee is appropriate and will be well received by the school.

It is a responsibility of the Committee to participate directly in those parts of the curriculum dealing with automotive-service course content, development, and application. This includes auto-service curriculum work, identification of source materials and educational tools, and especially the matter of appropriate auto-service teaching facilities.

Many teacher candidates will engage in both academic (teacher-training) and technical training at the same time. Naturally, the Committee will want to assist in the development of the technical side of the program. In the teacher-training program, the student should be provided with supervised "student-teaching" opportunities. Here again is an area where the Committee can be of assistance to the teacher-training school.

Completion of teacher-training should, of course, give the prospective teacher whatever recognition and certification is required. This will involve federal, state, and—in some major cities—local regulations. The training institution will be aware of these, but to avoid confusion and disappointment, the Committee and the prospective teacher should also know what is required.

Teacher Requirements

The would-be teacher must develop competence to perform the following:

- ☐ *Communicate effectively—reading, writing, speaking, and using communication aids of all types;*
- ☐ *Put into practice the principles of how people learn;*
- ☐ *Devise instruction—prepare objectives, courses, curriculum, and instructional materials;*
- ☐ *Supervise teaching activities;*
- ☐ *Organize and manage the automotive instruction shop and select equipment;*
- ☐ *Prepare budgets and handle purchasing;*
- ☐ *Evaluate instruction—prepare and administer tests; analyze and report results.*

The above are factors the training institution will be well equipped to handle so as to be in compliance with government regulations and standards. There are additional factors to which the Advisory Committee should address itself. It is advisable, for example, that the teacher-in-training be made aware of:

- ☐ *The value of good rapport with the automotive-service trade;*
- ☐ *Principles and practices in repair-shop, auto dealer, and service-station management;*
- ☐ *Educational programs and materials offered by automobile and truck manufacturers and other industry suppliers;*
- ☐ *The teacher's continuing need for trade-experience brush-up and updating.*

PRE-EMPLOYMENT SCREENING

The process of screening the applicant must always include:

- ☐ *Review of work experience (and test records);*
- ☐ *Review of educational background and qualifications;*
- ☐ *Checking of references;*
- ☐ *Interview and assessment of personal character;*
- ☐ *Final evaluation and decision.*

The procedure should be a joint effort of the school (or school system) and the local Advisory Committee serving the school. The areas of concern to each party are self-evident; certain areas, such as personal assessment, are the concern of both. The standards against which the applicant is compared should be established in advance; these are further discussed in Chapter 6.

Statements of fact on the application should be verified before the formal interview and all references checked out. References should be checked by phone rather than by letter, and when vague and non-specific replies to specific questions are encountered, a confidential personal visit may be in order.

The applicant's work and educational record (as verified) and the input from references will guide the interview. It is advisable that representatives of both school and Committee interview the applicant. A group interview has certain advantages and saves time. Too large a group, however, can be intimidating to the applicant; two, or at the most, three people are a large enough group.

A structured interview takes a little to put together but, in the end, saves time, and permits a thorough review of the applicant, and a more satisfactory employment decision. The interview structure or pattern should be based on rating sheets along the lines of Exhibits 1 and 2, at the end of this chapter.

The applicant should be rated in advance of the interview for the items in Exhibit 1—essentially factual information. For each item, the applicant should be rated satisfactory or unsatisfactory—"go" or "no-go".

The rating pattern that evolves should furnish clues for further exploration by the interviewers, whose task is to rate the applicant on the more subjective qualities in Exhibit 2. Each interviewer should rate the applicant as he sees him and then compare ratings with the others after the interview.

There are no hard-and-fast rules for comparing the ratings of one applicant with those of another. The evaluation will be highly judgmental, taking into consideration the relative merits of each applicant in terms of the specific requirements of the teaching position itself.

A judgmental decision, does not mean a casual one. The decision must be made in the light of the facts of the situation and on the basis of the qualifications of applicants at the

time. If a decision to hire is qualified or conditional on, for example, in-service training in a given area, such qualification should be formally noted. Furthermore, a follow-up procedure should be set up to determine, by the same example, that the training opportunity is provided by the source designated *and* accepted by the new instructor.

In summary, the end result of the screening and hiring process will not be to find the ideal applicant; he doesn't exist. Rather, the objective is to find the applicant with the most acceptable set of departures from the ideal for a given position at a given time and set of circumstances.

IN-SERVICE GUIDANCE & TRAINING

If we confess the necessity of hiring less than the ideal instructor, we nevertheless see numerous ways in which the new teacher can be strengthened and upgraded. (Technical *up-dating* is a separate subject, dealt with in Chapter 7.)

The teacher's principal strengths and weaknesses should have become apparent in the hiring process. The new man's ongoing experience in teaching will in itself be constructive. But experience alone is no substitute for considered guidance and in-service training, in which the school and its Advisory Committee each do their part.

Teacher Guidance

Much of what a teacher does to improve his performance he picks up day by day from those he works with and particularly from the one who supervises his work. In a large institution, such as a vocational school or technical institute, the automotive-service department staff will be large enough to provide this "rubbing off" of knowledge and skill with a minimum of conscious attention to the need for it. In the smaller department, however, the department head is likely to be busy with his own instructional load to the point where he must *make* time and opportunity for the guidance of his instructors. The frequently encountered one-man department has a special problem in that the teacher has a broad technical spectrum to cover—and a supervisor whose presence may be spasmodic and whose knowledge of the automotive program superficial and spotty at best.

Regardless of department size, the role of the Advisory Committee in guidance of teachers can be highly constructive. Liaison between the Committee and the school and the teacher himself must be such as to:

- *Confirm (or amend) the original evaluation of the teacher;*
- *Reveal promptly unexpected areas where teacher knowledge or competence must be bolstered;*
- *Indicate the programmed in-service guidance and training is proceeding as planned;*
- *Permit later reevaluation of the teacher in terms of the above factors and initial expectations.*

The mechanics of this liaison will depend on the size of the automotive-service department and the working methods built into the Committee's organization. The important thing is that this liaison be carried on and that the Committee make recommendations and take appropriate actions as indicated.

In-Service Training

New teachers, particularly, will require a certain amount of in-service training. This training will be essentially of an upgrading nature and may involve teaching skills and methods or automotive service techniques or both.

The employing school has responsibility for in-service training. In programming this training the school must:

- *Set time limits for achievement by the teacher;*
- *Provide standards for measuring the teacher's achievement and growth;*
- *Provide the teacher with whatever time, facilities, and other support are required.*

The enthusiasm and aggressiveness with which a teacher goes after additional training provides in itself an important measurement of his worth to the program. The teacher's opportunities for self-improvement are ever present and he should be expected to take the initiative in seizing them.

What is important here is not just that the steps of in-service training be taken, but that this training result in an improved and more effective instructor. Monitoring for progress toward this end result is a proper function of the Committee. Needless to say, the school will welcome help from the Committee in obtaining industry facilities for technical training where needed.

Various segments of the automotive service industry present training programs and test-and-certification opportunities that can be of great value to the automotive-service instructor. The Committee should supply information and recommendations with respect to these to the school administration as a matter of course.

PERFORMANCE EVALUATION

Special emphasis on performance evaluation of the instructor is critical during his first two to five years of teaching.

In the first place, errors in the initial evaluation for employment can easily be made and the sooner these are discovered and remedied, the healthier the educational program will be. When discovered early, such misjudgments are subject to easier correction than if they are allowed to stand for extended periods of time. Letting things ride until dismissal as the only resort is disruptive and costly at best.

The second factor is the practical difficulty of dismissing a teacher once he has acquired a certain number of years of service. Seniority is an important factor in most teacher contracts and in some areas job tenure is granted on completion of a specified period of service. The seniority/tenure factor notwithstanding, it is only good management practice to detect early the necessity for replacement of a teacher—if, in fact, the necessity exists—and to take prompt action.

The employing school system must be responsible for the evaluation and take whatever remedial actions are appropriate. Activities of the Committee in this area must be considered especially advisory. The Committee's participation in teacher evaluation is nonetheless valuable to the success of the program. The Committee's evaluative recommendations will be only as good as the evaluation procedure and the accuracy of feedback the procedure provides to the Committee from the school administration, from the teacher, and from the students he teaches.

The only way to accurately, consistently, and fairly evaluate an instructor's performance is, of course, through the establishment and application of performance standards. These standards must be formally established and also be known "ahead of the game" by all concerned,

including the teacher. The teacher should also know how the evaluation takes place and when. It goes without saying that he must know the results of the evaluation and thoroughly understand whatever corrective recommendations are forthcoming.

WORK EXPERIENCE

S U

Recency		
Breadth		
Depth		
Length of experience		
Continuity (Growth)		

EDUCATION

1-12 (or Equivalent)		
Apprenticeship (or Other OJT)		
College (Occupational Relationship)		
Trade School (Including Home Study)		
Teacher Preparation		
Teaching Certificate		
Up-Dating (Service Schools)		

REFERENCES

Employment		
Personal		
Educational		
Financial (credit)		

EXAMINATION (NIASE/NOCTI)

Written		
Performance		
Certification		

INTERVIEW

S U

(Group)

Communications Ability		
Sincerity of Purpose		
Appearance		
Enthusiasm, Alertness		
Personality		
References: (Professional involvement, Community involvement)		
Attitude		
Other Special Considerations		

U = Unsatisfactory

S = Satisfactory



The Student

The student who successfully completes the automotive-service education program becomes the "end product" of the program. He and his fellow graduates are the ones we are counting on to relieve the shortage of competent auto and truck mechanics and to help make and keep happy customers.

It is therefore of the utmost importance to put thought, planning, and effort into identifying and recruiting that kind of student who will make the best auto mechanic. Looking even further ahead, it is necessary to recognize the need for capable foremen, supervisors, and managers, so students with the additional qualities that are the ingredients of leadership should also be recruited.

THE STUDENT PROFILE

To try here to draw a profile of the ideal student candidate would be fruitless, because the ideal candidate couldn't be defined in such a way as to fit all localities or even to fit all situations in one locality. It is nonetheless appropriate that

the local Advisory Committee and school system attempt such a profile as a basic guide—with the foreknowledge that the supply of candidates at any given time and other variations in the situation from time to time will always entail compromise.

The profile of the desirable student will contain a listing of the qualities, traits, and aptitudes that go to make a competent auto mechanic. Since few of these characteristics are completely missing in anyone, acceptable levels must also be determined. The qualities deserving of highest attention are those that the educational program itself is unlikely to be able to change—such as mechanical aptitude or native intelligence.

Other qualities may be subject to improvement or correction in theory, but are impractical to remedy in the training program; typical would be substandard reading or mathematical skills.

Only those qualities in the student should be chosen that are measurable within reasonable tolerances. Characteristics so selected can then be evaluated in each prospective student and compared against the profile with some expectation of validity in acceptance or rejection.

A FAVORABLE RECRUITING CLIMATE

It would be nice if we could have the prospective auto mechanic student *coming to us* in sufficient numbers that we could screen and

enroll more than enough qualified students to meet the service industry's needs.

One obstacle to attaining this happy state has been the tendency over the past few affluent decades to equate "career" with "college degree." With due credit to the values of a college education, it is being discovered that the college degree, *per se*, is no guarantee of a job, let alone a career. At the same time, we note increased recognition of the income potential and employment regularity of the skilled trades.

Unfortunately, automotive-service work is not universally listed among the skilled trades. To make matters worse, the image of the automotive-service industry is presently somewhat tarnished, whether deserved or not.

All in all, these factors increase the magnitude of the recruiting task if in no other way than by forcing a search for student candidates in a formidably large population. Among the groups of people that must be reached are:

- ☐ *High-school students;*
- ☐ *Recent graduates unhappy with their present jobs or career choices;*
- ☐ *Veterans of the armed services;*
- ☐ *Unskilled workmen with the will and capacity for training;*
- ☐ *Minority groups with high unemployment rates.*

One thing most of these people have in common is little or no knowledge of the automotive-service industry. The benefits available to these people are genuine and great—yet to reach all of them effectively is a huge task.

Another factor normally assigned to those considered student candidates is youth. But a successful recruiting program must take into account the adults who exert a compelling influence on the career thinking of our young people; parents, teachers, counselors, and many others.

Negative attitudes toward skilled labor, and especially toward automotive-service work, originate largely within this body of adults. Therefore, it is necessary to include in the recruiting program ways to reach these influential adults and obtain their *help* instead of their apathy or downright opposition.

Presenting the Industry Story

Ways must be found to put the story of automotive-service work and its benefits into an organized and effective package—and then present it to the widest possible audience, including both adults and young people.

Actually, "the story" will be many stories: as told by the car dealer, the independent service shop owner, the mass merchandiser, the fleet-maintenance supervisor. This is as it should be, for the diversity and scope of the industry must become highly visible.

Likewise, "the package" carrying the story will take many forms: Printed leaflets, notebooks for counselors, speeches for luncheon clubs, displays for airport lobbies, and "open house" in service-departments.

However the job is done, carrying the story of the career opportunities of the industry to the broadest possible audience will make it easier to identify and interest qualified young people.

Recruiting Within the Industry

A person who is already a part of the automotive-service industry has several advantages as a prospective student over one with no automotive experience:

- ☐ *He can be more readily identified...more reliably evaluated.*
- ☐ *His work experience and level of competence may serve to lessen the amount of training required;*
- ☐ *The possibility of on-the-job or after-hours training is greater.*

He is more of a "known quantity." His employer is sure to have at least a "feel" for his interests and aptitudes. He has probably demonstrated whether he likes to work. He is in a position to be rated for alertness, initiative, and ambition. How he rates with his employer can be an invaluable supplement to the student's initial testing.

Measurably as the prospective student has demonstrated inherent ability and competence in even a small area of service work, he has most likely shown himself worthy of the time and cost of further education. The greater his experience, the more likely he can make up his areas of deficiency by part-time school work, such as in evening classes.

The High-School Student

Although the high-school senior is an immediate target for the recruiting effort, we should also work at getting our story through to the sophomores and juniors. The earlier the student is reached, the more likely he will include automotive-service in his career thinking. Three routes to this student should be taken:

- *Counselors and advisors;*
- *Industrial arts instructors;*
- *Career-oriented events.*

Counselors and faculty advisors have considerable influence on the career thinking of students. They have continuing opportunities to observe a student and discuss with the student the future that lies before him. To aid the counselor and encourage him to rank automotive-service high in his work with students, the Advisory Committee should prepare a complete auto-service career manual for his use.

The manual should deal specifically with the facts of the industry in the community. Wage levels; employment, security, educational, and training offerings; career advancement opportunities; and any other information pertinent to the student's career decision should be included. A listing of student aptitudes and other qualities will guide the counselor. The manual should be in a loose-leaf binder to facilitate updating and revision.

Industrial-arts instructors can also be reliable aids in recruiting. Even if no auto-mechanics work is offered, the teachers of other shop subjects can identify students with mechanical aptitude and other desirable traits out of firsthand contact and experience.

Vocational Schools

Students in vocational schools should be recruited in much the same fashion as in academic high schools. It must not be assumed that all vocational students have made a firm career decision or that their career direction cannot be changed.

Since the vocational school is likely to be participating in automotive-service training, the Advisory Committee will have regular and effective contact with the school administration and instructors.

Recruiting Veterans

Veterans of the armed services are a career-hungry group, motivated to make up as quickly as possible the time they often consider "lost" in service. In addition, the GI Bill of Rights provides them with a certain amount of financial support for education and job training.

Many of these men have received considerable automotive-service training while in service. Some of these men may require a minimum of training to become fully competent. Others may have sufficient auto-service education to be considered for training as instructors.

Project Transition is a program whereby vocational training is provided by the armed services in the late months of the man's term of enlistment, in cooperation with an industry or employer.

Information on all phases of veteran recruitment is available from the Veterans Administration local officers.

Other Recruitment

There's a large body of men who have graduated from high school, found work, and yet are far from satisfied with what they are doing.

Circumstances have propelled even more men into unskilled or semi-skilled work—men who are capable of becoming excellent skilled mechanics. With proper training—and in many cases completion of high school—they can form valuable additions to the work force. Much the same may be said of members of minority groups who are seeking ways to join the mainstream of usefully employed American working people.

State employment security offices are in contact with a constant flow of these persons. People in these offices should be informed of the kind of trainees needed. They should have the same guide book about the industry provided school counselors. Many of the more ambitious potential trainees from these groups turn to school advisors and counselors on their own, so the preparation given the counselors will also serve well in this situation.

QUALIFYING AND PRE-TESTING

The process of qualifying a potential student for automotive-service education must be an integral part of the recruiting process. A considerable amount of time and money will be

spent on the student who enters training, and there must be some assurance that he is receptive to, and capable of profiting from, the training he will be offered.

In the normal process of recruitment, recruiters will have some general idea of the candidate's basic traits and capabilities, perhaps even before talking with him. Whoever guides the candidate to the program will have some knowledge of the man's interests, abilities, and experience.

Care must be taken to assure that highly favorable early interview impressions—or certain negative impressions—do not prejudice the final decision. Determination of the student-candidate's potential can be greatly aided by pre-school testing. These tests can yield quite reliable clues to those characteristics, such as mechanical aptitude, considered essential in an auto mechanic. The tests can also tell a great deal about the candidate's present knowledge and skills. And these, in turn, can help determine how much of what kind of training he requires. Chapter 6 on Test and Measurement deals at greater length with this subject.

COUNSELING

Counseling is a two-fold activity. Its first use is to guide the qualified prospective student into the program. The second use is to guide and help the student once he is in the program.

The student's entry into the program does not cause all his problems to vanish; he will encounter new ones as the program unfolds. The counselor's job is to work with the student to help him identify problems and then to work toward their solution. The counselor must also constantly watch for signs of discouragement or loss of interest and dig for the causes.

Much of the day-to-day counseling will fall to the teacher. He has the most intimate contact with the student and is often in a position to detect and correct a problem while it is small. In this area, the overlap between teacher and counselor is apparent and the importance of the two working closely together cannot be overstated.

Except in larger school systems, the counselor cannot be expected to have the same auto-service expertise as the teacher. The teacher will therefore provide much of the counseling that focuses on trade knowledge and skills. The counselor, on the other hand, will focus on the student's needs for advice on

academic matters and in connection with his personal growth, interests, and attitudes. For larger programs, especially in vocational schools, at least one counselor with a deeper knowledge of automotive service—greatly increasing his value to the student and to the program—should be available.

STUDENT PLACEMENT

Placement will not be a factor with many students in the program. These are students presently employed in the industry who are undergoing additional training at the urging of their employers and often at the employers' expense. A student from within the industry, even in school on his own initiative, is likely to have a fairly good idea of where he wants to go on completion of his work. The school placement counselor should, of course, be as available to him as to anyone else.

The placement activity will serve, for the most part, those students who entered the program with little or no experience or contact with the automotive-service industry. Of course, many of these students will develop such contacts in the course of their training—particularly in a cooperative program where they will be employed in the trade on a shared-time basis.

It is logical that the placement activity center at the school. The school may already have an organized placement office. Lacking this, it should be encouraged to develop such an activity for the program—perhaps by assigning the counselor most deeply involved to the activity.

The activity of the placement official will naturally consist of fitting available graduating students to job openings he is aware of in the community. Identifying the graduating students is an internal school chore of only modest complexity. The placement official will need to know something of the student's personal aims and interests in addition to his areas of training and achievement record. He should develop a form that will give him this information for easy reference.

Input regarding employment opportunities is less easy to organize. This input must come from individual establishments in the community and each job listing should include as much detail as possible about the work involved. A standard form for this purpose will facilitate matching applicant to job.

The placement official's objective should be the exposure of a given student to as many suitable job openings as possible *and* the exposure of an employer to as many qualified candidates as possible. The placement official will, of course, avoid matching up an applicant and a job that are obviously unsuited to one another. But the "final fit" of graduate mechanic to an employer is the responsibility of the mechanic and the employer jointly. The success of this final decision will be greatly enhanced when graduate and employer both are able to have several interviews and as wide an area of choice as possible.

The part of the Advisory Committee in placement is two-fold:

- *It must work with the school in setting up an adequate placement function and evaluate its performance on a continuing basis;*

- *It must work closely with all industry establishments in the community to encourage each to use the placement office of the school, to provide adequate job information to this office, and to develop an effective procedure for interviewing and evaluating mechanics referred by the school.*

If the need for competent mechanics is as great as claimed, and if the educational program performs to produce more qualified mechanics, the failure of local shops and establishments to follow through with job listings and effective interviewing and hiring practices can seriously impair the ultimate success of the program.

The Curriculum

Simply stated, the curriculum is the "menu" of courses offered by the school to the automotive-service student. Unlike a restaurant menu, however, these courses are not offered subject to free and open choice by the student according to his inclinations. Instead, these courses represent an orderly arrangement for teaching and learning efficiency of the knowledge and skills the student must have to reach his ultimate goal as an auto mechanic.

The courses in the curriculum are of four types:

- **Basic service procedures** (example: *engine tune-up*);
- **Specialty procedures** (examples: *diesel engine service, truck transmission overhaul*);
- **Related theory** (mathematics, physics);
- **Contributory academic work** (language skills, basic economics).

Depending on the local situation, it may not be necessary or desirable for the automotive-service curriculum to offer a complete range of courses in all four categories. Course offerings



will vary with the needs of the industry in its community. In some areas, heavy-truck service may be important enough to become a *basic* and major segment of the curriculum rather than just a specialty. Some curricula can be worked out whereby the theory and academic courses are handled by local high schools or community colleges, even though they do not participate directly in automotive-service training.

In certain shop courses, it may be possible to include the necessary theory or mathematics in the classroom segment of the course.

CONSTRUCTION OF THE CURRICULUM

The school system and its teachers have the responsibility for instruction; by the same token, they should be responsible for the final development of the curriculum. This assignment of responsibility is also dictated by the experience the school people have in curriculum

building along with their knowledge of governmental standards and guidelines. But the school will still need the help of the Advisory Committee.

Only the Advisory Committee can provide authoritative guidance on what should constitute basic service procedures and designate the specialty procedures applicable to the local industry. The Committee must aid in developing objectives for the curriculum and the individual courses within it. And the Committee should review the content of automotive-service courses for adequacy and relevance to current industry practices. Valuable information on curriculum development will be found in *Career Development Standards for Vocational Automotive Service Instruction*, published by the Motor Vehicle Manufacturers Association (1973).

CURRICULUM OBJECTIVES

Perhaps the first step in curriculum planning is the development of program objectives. These should be written and published for the use of all people concerned with the program. Some of the more obvious objectives to be pursued are:

- ☐ *To develop automotive-service skills and knowledge sufficient for acceptable job-entry performance;*
- ☐ *To provide an understanding of the principles of operation of the automobile and its several sub-systems;*
- ☐ *To inculcate desirable attitudes towards work and the quality of performance;*
- ☐ *To develop respect for fellow workers, managers, and customers;*
- ☐ *To develop safe work habits.*

Pursuit of curriculum objectives such as these must be appropriately incorporated into the specific content and activities of each course.

As courses are developed within the curriculum, again step one is the statement of objectives. Course objectives, of course, fit within the overall program objectives, but they are unusually specific. A properly written set of course objectives is a statement of exactly what

a student is to be able to do as a result of successfully completing the course. To illustrate, here are the objectives of the first-level course in electrical systems taken from *Career Development Standards for Vocational Automotive Service Instruction*. The student will be able to:

- ☐ *Service batteries: test, charge, maintain, replace cables;*
- ☐ *Service charging system output, adjust or replace belt;*
- ☐ *Service spark plugs: clean, gap, or replace;*
- ☐ *Check spark plug wiring; replace and clean distributor-cap towers, wiring, and other minor electrical units;*
- ☐ *Service and lubricate distributors;*
- ☐ *Replace minor electrical units: head and tail lights, panel lights, fuses, flasher units.*

When the course objective is specifically stated like this, in terms of what the student *should be able to do* upon completion, then a meaningful evaluation can be made of how well both teacher and student succeeded.

CURRICULUM LEVELS

You will note how the objectives of the beginning electrical course above are simple and call for a minimum of technical finesse and theory. The second-level electrical course progresses to tune-ups and alternator and starter service. Level three includes electronic-ignition service, and work on complex electrical accessories such as automatic speed controls and air-conditioning electrical systems.

Since you can't teach a student *everything* about electrical systems in a single course, it is common sense to break the subject down into courses of increasing technical and theoretical complexity. This approach achieves two highly valuable purposes:

- ☐ *Each course, however elementary, gives the student a "package of accomplishment." However small the "package," it is nevertheless something the student can do competently and it gives him a sense of achievement and progress.*

- *Each course builds a base of skill and knowledge as a foundation for the more advanced course to follow. Theory and knowledge in moderate doses are reinforced by practical application before proceeding to the next level.*

CURRICULUM FLEXIBILITY

When you take the several areas of automotive service and create for each a series of courses building sequentially on one another, you develop what is essentially a modular program. This modular organization builds into the program a high degree of flexibility that is necessary to accommodate the widely varying needs of our students.

The more flexibility in the program, the easier it will be to enroll and train students who are employed and must acquire their education in smaller segments spread over a period of time. Evening classes can more easily be provided, as can cooperative programs and on-the-job training. Specialized courses—either on a continuing basis or as temporary additions to the program to serve short-term industry needs—can also be provided.

This same flexibility makes it easy to upgrade present mechanics. Many of these men need only a few courses to broaden them from specialized or limited mechanics into competent general mechanics. Others may want to take specific courses merely as brush-up on subjects they know reasonably well, preparatory, for example, to taking the NIASE certification examinations.

UPGRADING THE CURRICULUM

It would be unrealistic to leave the impression that the curriculum of each local program is always complete and well-rounded, serving *all* the needs of the industry and the student. In most instances, each local program will suffer from practical limitations imposed by:

- *Budgetary restrictions;*
- *Lack of teachers qualified in all areas;*
- *Insufficient facilities, room, equipment;*

- *Conflicting needs of individual segments of the industry.*

It is the Advisory Committee's responsibility to resolve these factors in such a way as to arrive at an optimum program under the circumstances. A modest program with a limited curriculum is certainly preferable to none at all or to a haphazardly thrown-together effort that provides poor training and fails to attack the major training deficiencies of the local industry.

The program that stresses curriculum quality and relevance even on a small scale is the first step in attracting support by the industry, the schools, the students, and the community.

UPDATING THE CURRICULUM

In the past few years many new automotive systems have been introduced: air conditioning, emission-control systems, and electronic ignition. Technological advances like these are going to continue to place new demands on the capabilities of the automotive-service business. In turn, the automotive-service industry will continue to look to vocational training institutions to update their programs to incorporate these new developments.

We cannot assume, however, that all teachers and program administrators will automatically update the curriculum and course content as changes come along. The custom of annual model changeover makes review of the curriculum on a year-to-year basis practical. The Advisory Committee should take responsibility for this review and update.

The review process need not be complicated. If detailed course objectives are provided, a re-reading of these will reveal the omission of new procedures and signify need to include them in the course. The Advisory Committee should maintain regular communication with auto, truck, and accessory manufacturers so as to receive new technical and service data as it is published. Input from service establishments should also be sought. Similar regular contact with teachers and school administrators would then result in much updating being done on a continuing basis.

Chapter 7, the Ongoing Program, covers the subject of updating in further detail. But the Advisory Committee should guard against the comfort of the status quo by setting up a mechanism that will insure the regular review of the curriculum in line with changing needs.



Facilities And Tools

Even the best instructor should not be expected to turn out competent and immediately productive graduates with old-fashioned, improper, or inadequate facilities and tools. Planning and providing the proper facilities and tools is a difficult part of establishing an automotive-service education program, especially when the limitations of available space and budget are considered.

There are two primary objectives to be met by the facilities provided. They must be:

- *Comparable to the real-life service shop;*
- *Adequate to the teaching objectives.*

REAL-LIFE FACILITIES

The automotive-service education facility cannot, in all ways, duplicate the real-life auto shop in which the student will work after graduation. In many respects, however, school facilities can and should be very comparable to the facilities the student will encounter at work. The more

the school atmosphere resembles the service shop, the easier will the student be able to make the transition from trainee to producer.

Exact comparability of school with trade shop is impossible for two reasons. First, the school is an educational operation and the trade shop is a production operation. No matter what the equipment similarity, the school works basically with *students* and the shop works with *customers'* cars and trucks. The second reason is that no two trade shops are exactly alike and the question arises as to what shop the school shall pattern itself after. How do you go about striking an "average" between a three-bay service station, a new-car dealership, and a fleet maintenance shop?

The approach, therefore, is to inventory the service procedures and operations that must be taught to best meet the needs of all types of local shop, and then to build a facility around these functions. When these functions have been determined, the physical layout of the facility can be planned. While the physical layout will not duplicate any one commercial shop, it should be typical of the way trade shops are laid out. Teaching methods will require certain departures from trade shop arrangement, and these shall be dealt with shortly.

Tools and equipment should conform to those being used by local shops. Although different shops prefer different *makes* of equipment, the actual operational differences are not usually so great that they cannot be accommodated in the on-the-job training each graduate will inevitably require. Where the operational or other differences are substantial (for example, between static and dynamic wheel balancing), it may be advisable to equip for both methods. Or, if this duplication is too costly, alternatives to the school's choice of equipment will have to be covered in some other way, such as a class visit to a local automotive shop.

Each car manufacturer supplies a number of tools especially designed to facilitate a given service operation of one or more models of its own cars. Since it would not be feasible to have one of each of these for all makes and models, some selectivity will have to be observed by the instructor. The use of these special tools will, to a great extent, be part of the mechanic's on-the-job training.

Power and hand tools are sufficiently standard in use from one shop to the next that any suitable brand or type will serve.

Although it is common practice in trade shops for mechanics to own their own hand tools, this same practice will usually be the exception in the school shop; an adequate supply of such tools will be required. The school should encourage its students, however, to begin to build their tool kits as they progress through the curriculum. By spreading his cash outlay for tools over a period of time, he will better be able to afford them—and, in fact, be encouraged to buy tools of good quality. Local sales personnel of major tool manufacturers should be contacted for assistance in establishing tool purchase programs.

TEACHING FACILITIES

Additional facilities and equipment will be required that are peculiar to the teaching job itself. Among these facilities are:

- ☐ *Classroom space;*
- ☐ *Visual instruction tools, such as motion picture and slide projectors;*
- ☐ *Special equipment to demonstrate basic principles and theory.*

A superior instructor could undoubtedly make do without many of these facilities. But to the degree they are available to the teacher, both the effectiveness and efficiency of his instruction will increase. And these two qualities have definite cash value to the program, the students, and the service industry.

A thorough and accurate understanding of basic principles and theory is also an essential ingredient. It is not difficult to teach a man how to perform a specific service procedure on a given make and model of car without going into theory. But when he is given a comprehension of basic principles at the same time, he understands both *what* he is doing and *why*. He should then be capable of *adapting* the procedure he has learned to other makes and models, including next year's models. The difference between a man who uses his hands to do just what he's been told to do, and one who uses his mind to handle the exceptions and variations, is a valuable difference indeed to all concerned, including the owner of the car.

Efficiency means achieving instructional objectives in the shortest possible time. By reducing training time and lost motion, the "return on investment" of the facility is increased, competent mechanics enter the industry more quickly, and the student starts sooner to produce his own income and get his career underway.

Efficiency requires the teaching of many students at once by the same teacher. To do this, the instructor needs several facilities not found in the typical trade service shop:

- ☐ *Classrooms;*
- ☐ *Visual aids equipment;*
- ☐ *Demonstration stalls or areas;*
- ☐ *Cutaway engines, transmissions, and other parts and components;*
- ☐ *Duplication of tools and equipment to enable several students to work singly on the same service operation.*

UPDATING FACILITIES

Facilities and equipment need updating just as do the curriculum, course content, and teacher capability, and for the same reason: technological change and improvement from year to year. Updating facilities may be more costly than updating course content, but failure to do so, at least on a minimal scale, can impair the effectiveness of the educational program.

FACILITIES ORGANIZATION

The automotive-service facility, including tools and equipment, requires organization. They must be budgeted, maintained, replaced, and updated as circumstances require. This point may seem self-evident, but the pressures of day-to-day teaching make it all too easy for the instructor to ignore or postpone these chores that are his responsibility.

DETAILED FACILITIES ANALYSIS

The Advisory Committee should counsel the school on which facilities, equipment, and tools

are *necessary*, which others would be advantageous, and which could be considered superfluous. The needs of local establishments and their prevailing practices should be the determining factors. Also an important factor is the availability of floor space, which naturally limits the amount of equipment that can be effectively used in teaching.

Sections 9 and 10 of *Career Development Standards for Vocational Automotive Service Instruction* contain excellent guidelines for facilities, floor space layout, and tools and equipment.

Test And Measurement



The need for test and measurement has been stressed throughout the first three chapters. The more either a teacher or a student can be measured against predetermined, objective standards, the less evaluation of either will depend on subjective judgement.

As a basic principle, therefore, valid tests should be used wherever possible in the program. The use of testing must be qualified in two ways:

- *Not all human qualities can be successfully tested or measured in quantitative terms;*
- *Tests that purport to measure human qualities vary widely in their accuracy and validity.*

TESTING VS. JUDGEMENT

When the quality being measured is susceptible to accurate testing, it is possible to improve overall evaluation by using a test to *replace* subjective judgement. Tests are thus appropriately used to measure a student's acquisition of knowledge, of theory, of basic principles.

Tests of other qualities are less precise for two reasons: first, the exact nature of the quality being measured is often difficult to define; second, the tests must measure a highly abstract quality by use of words that have different meanings to different people. Tests of aptitude native intelligence, and initiative fall into this category. Since these tests are not absolute and their results are not infallible, they must be used to *supplement* personal observation and good judgment.

TEST AVAILABILITY

A large body of standardized test and examination material is available nationally. In some areas, including automotive-service testing, these tests are administered and graded by independent national testing agencies. Many other tests are offered by professional test developers and publishers, for local application.

Generally speaking, the use of these standardized tests is recommended. They are more likely to be complete, authoritative, and backed by years of experience in their use and improvement. Tests leading to certification, such as those prepared by the National Institute for Automotive Service Excellence (NIASE), are a practical necessity to build universal acceptance of the certifications granted.

In the absence of a valid standardized test, the school or instructor will find it necessary to prepare one. The need for these tests is most common within the confines of specific courses in the curriculum. Most courses include one or more tests during the term of the course, and a final examination. Tests for course purposes may be written or "hands-on" demonstrations of the student's ability. Construction of such tests is part of the training received by the instructor during his preparation in a teacher-training institution.

MEASUREMENT STANDARDS

A test is a tool for making a measurement. Once the measurement has been made, some sort of standard against which to compare it is necessary. Even in those areas where we must rely more on judgment than formal testing, standards help to minimize the subjective content of the evaluation. Standards are of two types: absolute and relative.

For most automotive-service procedures, the standards are essentially *absolute*. In other words, the operation must be correctly performed, and usually in a specific way. Either the operation is successful, or it is not. We know how long a given procedure should take and the student's accomplishment is rated accordingly.

Standards of attitude and other personal traits are *relative*. There are, of course, totally unacceptable levels for such traits, but by and large, the student is ranked against his fellow students. In working with these hard-to-measure qualities, absolute standards tend to be essentially minimal and the operative standards will vary from class to class and year to year.

The Advisory Committee may consider itself fortunate, perhaps, that its primary concern with standards has to do with auto-service work standards. Considerable help and guidance in establishing such standards is available from manufacturers, service-manual publishers, and the local industry establishments.

NATIONAL AND LOCAL STANDARDS

Certain standards apply in nearly equal degree nationwide. Standard techniques and times for service procedures should apply nationally, certainly, with only minor deviation from one locality to another.

Other standards may vary according to locality, and for that matter from shop to shop. In small shops the mechanic himself is more likely to have contact with the customer and standards in the area of getting along with people may have to be higher than in larger shops.

It is possible that certain standards will have to be adjusted to fit the availability of talent in a given locality. Where such adjustment produces standards too close to the barely acceptable level, the Advisory Committee and the school will have to analyze the situation and lay plans for correction and improvement so as to permit standards to be raised in the future.

That the school serves a specific locality is no assurance that its graduates will remain and work in that community indefinitely. A degree of mobility—both in and out—is inevitable in contemporary American society. It is therefore in the school's interest to maintain standards at least equal to the national level.

FOLLOWTHROUGH

The giving of a test is not an end in itself, but entails at least four stages of followthrough once the student has handed in his paper:

- ☐ *Analysis;*
- ☐ *Review and report;*
- ☐ *Indicated action;*
- ☐ *Reevaluation.*

Analysis is simply the grading of student test and comparison of the performance with those in the group. The first comparison must accommodate appropriate standards. Comparison of one student's performance with others is informative, as is comparison of the class performance with that of previous classes.

Review of test results, in the overall, and student-by-student, follows. Efforts should be made by the teacher or test administrator to spot the causes of a student's substandard performance and to define specific areas of improvement.

Report on test scores and review is made to the student, the school administration, and, where appropriate, to the Advisory Committee. The committee's interest will not lie so much in student-by-student reporting as in a report on the progress of a class or group, particularly a group at or near the point of graduation.

A quick way for student discouragement to set in is to fail to report test results to each student. No one has a greater personal stake in his progress than the student himself; he knows what tests are for; failure to report to him is likely to be taken negatively.

Action may or may not be indicated by a particular set of test results. One action nearly always required is the counseling of students whose test results show substandard improvement and need for corrective action. The instructor's or counselor's discussion with the student should be straight-forward and as specific as possible regarding what the student must do to correct his deficiencies.

Indicated actions are not always aimed at the student. Test results may indicate poor test

construction, or that it was prematurely given—or even that the instructor did an inadequate teaching job. School action should be promptly taken when problems like these are revealed.

Reevaluation is the process of taking advantage of the many things a succession of tests, examinations, and evaluations reveal during the course of a year and as the entire program unfolds.

Tests given in school will serve to measure the validity of the tests given student candidates. Final examinations, and especially certification tests, give a clue to instructional quality and how well this is being tested within the courses of the curriculum. The well-run school will have a working mechanism to ensure reevaluation in these ways on a periodic basis.

And the Advisory Committee, likewise, must set up its own mechanism for reevaluation, especially in those areas where its own responsibilities and areas of expertise have impact on the conduct of the program.



The Ongoing Program

We have tried to describe the automotive-service vocational education program in dynamic rather than static terms—as a living, growing, expanding activity. Rarely is a step to be taken or a course of action to be instituted as a "one-time" thing.

The objectives of the program will not be achieved at any given time, but will have to be pursued on a continuing basis. Objectives valid at the start will require change because of changing times and conditions. To the Advisory Committee in particular we recommend a motto: "Keep everlastingly at it!"

As aware as we are that nothing is as certain as change—with special application to the automotive service industry—the temptation will be strong to assume that procedures once established are good for all time and that mechanisms and systems set up to achieve certain ends will run themselves in a kind of perpetual motion. And we must guard against the tendency to confuse activity with accomplishment.

There are two kinds of change we will have to be aware of and ready to accommodate:

- ☐ *Technological change;*
- ☐ *Educational change.*

TECHNOLOGICAL CHANGE

In the last few years we have undergone enough technological change in automotive engineering, manufacturing, and service to make us keenly aware that there is much more technological change to come.

Changing technology will be the easiest type of change to deal with:

- ☐ *It's highly visible;*
- ☐ *We get reasonable advance warning of it from automotive manufacturers;*
- ☐ *The change involves physical things we can easily manipulate and control;*
- ☐ *The service industry gets much help from the manufacturer—manuals, special tools, service clinics and training.*

Even with these advantages, however, the auto mechanic is going to be hard put to keep up. Unless the educational program is attuned to constant change, the manufacturers will continue to outstrip in technology the ability of the service industry to deal with it.

EDUCATIONAL CHANGE

Many of us can remember when a course in auto mechanics was just that—mechanical. The car or truck was nothing more than a mechanical system with a minimal electrical system for ignition and lighting. A relatively simple set of hand tools would enable us to perform nearly any service operation. Mechanical tolerances were such that self-taught service techniques would often suffice.

These days are long gone. The automobile has grown in a matter of decades to a complex of mechanical, electrical, and hydraulic systems and subsystems. Today, with such systems as air conditioning, electronic ignition, and emission controls, manufacturers have applied electronics, chemistry, and physics to a highly sophisticated degree. We have every reason to expect this technological advance to continue—most likely at an accelerated pace.

The sophistication is such, in fact that the auto mechanic must be well grounded in electronics, chemical, and physical theory to perform the service these systems require. The burden thus rests with the automotive-service vocational education program to provide this theory to the auto-mechanics student. The time spent on so-called academic instruction will increase substantially compared with shop-instruction time.

As this body of knowledge and skill builds up, it will outstrip the capability of any one student to absorb it all. The economics of training costs and service-shop operation will dictate a turn more and more to the specialized mechanic. The fully competent general mechanic will find his talents used as a diagnostician—locating and identifying trouble and referring actual service work to the appropriate specialist.

The educational program will have to adjust to this situation. It will provide greater in-depth training in the individual auto-service specialties. Some type of "post-graduate" program will be developed to provide selected students the broader training required for the specialty of diagnostician.

Advanced programs will also be developed in auto-service shop management. Courses to train men specially for the jobs of service advisor and service manager will be offered. We will recognize that the best possible collection of auto mechanics can be seriously hampered in their work by inadequate support and management.

You may infer from all this a rather extensive automotive-service vocational education program. This is just what the ultimate program is likely to be, because the need for it will be great. The need, in fact, is already here, so planning for the ongoing program might well start right now.

CHANGING TEACHING METHODS

Techniques of teaching subjects like auto mechanics have changed drastically in just two or three decades. We are so used to slides, motion pictures, and other visuals that it's hard to remember how rare these were until after World War II.

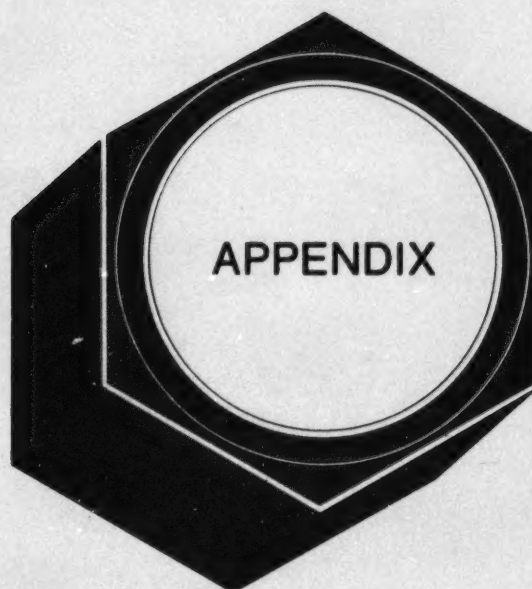
Now we have closed-circuit television, giving every student a "ringside seat" for live or videotaped demonstrations of service techniques. Availability of tapes for this new medium will increase, making an invaluable contribution to both the effectiveness and efficiency of instruction.

Educational methods and testing techniques will always continue to improve. The demands on our program are such that we must be continually alert for new ways of reaching our goals, trying them, and adopting them as rapidly as they prove themselves.

THE CHANGING STUDENT

The past ten years have made us aware—often uncomfortably aware—of how the goals and attitudes of our young people can change. Our responsibility extends beyond mere awareness and accommodation of these changes. It includes responsibility to do what we can to *direct* these changes in constructive ways.

One thing we know: large numbers of people will always be needed to perform the world's work—whether "brain work" or hand work or a combination of both. And the rewards of life, monetary and otherwise, will go to these people. There is no right or wrong about this kind of participation in society—it is a plain matter of fact.



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